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Where Medicaid Eligibles Receive Ambulatory Care: A Methodology to Assign Predominant Source of Care

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It is frequently alleged that the cost of medical care, among other factors, is affected by where people receive their ambulatory care. For example, two identical patients could have different cost patterns depending on whether they entered the medical care delivery system through an outpatient department or a physician's private office. Most state Medicaid programs allow the eligibles to choose among many providers for delivery of their medical care. The study of which this paper is a part focuses on the California Medicaid program which observes this "free choice of provider" provision for beneficiaries, and is concerned with the issue of how the relative prices paid for physician services affects utilization of physician services and hospital care. Part of the study required determination of the predominant source of care (PSC) reflecting where eligibles received the bulk of their ambulatory physician care, under the presumption that this was the eligible's point of entry into the medical care delivery system. Determination of the PSC of the Medicaid eligibles in the study sample is the subject of this paper, because it is of interest in and of itself.

THE DATA

The information used to construct the predominant source of care consisted of Medicaid claims data for a six-month period from January through June in each of three study years (1976 to 1978) for California Medicaid eligibles, collected for a sample of disabled eligibles and a sample of female AFDC eligibles. Over 8,000 eligibles were included in each subsample, yielding a total sample size of over 16,000 Medicaid beneficiaries. The Medicaid claims data included the following information:

- Medical procedure--e.g., office visit, surgical procedure

- Care setting--e.g., outpatient department, physician's private office
- Provider type--e.g., short-term hospital, physician, clinic
- Specialty of the physician--e.g., internist, general practitioner.

Counts of services and expenditures were tabulated to create a utilization summary record for each eligible.

METHODOLOGY

The assignment of a predominant source of care for each eligible was based on the number of ambulatory visits to a physician in the two different care settings. Ambulatory visits to a physician's private office were then categorized into visits to a general practitioner's office and visits to a specialist's office. Ambulatory visits to a physician in a hospital setting were categorized by hospital type (i.e., public or private) and by hospital ambulatory setting (i.e., emergency room or outpatient department).[1] The assignment scheme yielded eight categories:

- Emergency room in a public short-term hospital
- Outpatient department in a public short-term hospital
- Emergency room in a private short-term hospital
- Outpatient department in a private short-term hospital
- General practitioner's office
- Specialist's office
- Clinic
- Nonuser of ambulatory care

The cases in the last category were Medicaid eligibles with no ambulatory care visits during the six-month observation period; it should be noted that this included any eligibles who used medical services other than ambulatory care.

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[1]Hospital is defined as short-term acute care hospital. Since both the physician and the hospital were able to bill for a visit, counts of visits to a public or private hospital ambulatory setting were constructed to prevent double-counting of visits.

One potential problem we foresaw with frequency of ambulatory care visits as a measure of medical usage was that not all visits are of the same type or complexity. To test whether or not frequency of ambulatory care visits provided an adequate measure of medical care use, we compared it to a more direct measure of complexity, namely the relative value units (RVUs) used in determining payment to a physician for services to Medicaid patients in California.[2]

A preliminary sensitivity analysis comparing assignment of PSC using the setting with the maximum number of visits to assignment using the maximum number of RVUs indicated that, in over 91 percent of the cases, the assigned PSC was the same. Since RVUs could not be assigned to some types of public or private ambulatory hospital visits, the frequency of physician visits to an ambulatory setting was the measure chosen to determine PSC.[3]

A second potential problem we foresaw was the possibility that frequency of visits would not give us a clearly predominant source of care in many cases. This did not turn out to be a major problem, because in very few cases were there equal values for two sources of care. In a sample of 4,000 female AFDC eligibles, for example, 652 eligibles were assigned one of the four ambulatory hospital settings as the predominant source of care. In only 16 (2.5 percent) did the same number of visits occur for more than one category. For the eligibles assigned a general practitioner or a specialist as the predominant source of care, in less than 1 percent was the number of office

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[2]There are five categories of services: medicine, anesthesiology, surgery, radiology/nuclear medicine, and pathology. The relative value unit (RVU) indicates the relative value of the median physician charges for the services within each category, based on fee data derived from the files of third party payers. (California Medical Association, 1969 Relative Value Studies, fifth ed., adopted by the CMA Council, May 10, 1969.)

[3]RVUs for the use of a hospital examining room or emergency room, for example, have not been established for claims filed under California's Schedule of Maximum Allowances (SMA).

visits to a general practitioner the same as the number of office visits to a specialist. Since ties occurred infrequently, the PSC was simply assigned randomly across those tied categories. For example, if there was a tie between the number of visits to a general practitioner's office and a specialist's office, then half the time the beneficiary was assigned a general practitioner and half the time the beneficiary was assigned a PSC as a specialist.[4]

Whether or not to group the different settings of care in the process of assigning PSC was the final consideration in development of the methodology. In other words, do we simply use the maximum number of visits across the seven settings of ambulatory care or do we develop a method which "nests" some of these settings? Suppose a beneficiary had three physician visits to a clinic, two physician visits to a general practitioner's office, and two physician visits to a specialist's office. Simply using the maximum number of visits would identify the PSC as a clinic--even though this beneficiary actually went to a private physician's office more times than to a clinic for ambulatory care. Obviously, in this case the methodology should be able to collect ("nest") the different types of physician visits in order to yield the appropriate assignment. Different techniques of "nesting" across settings were developed and compared to test the sensitivity of PSC designation to the method used. As it turned out, the assignment of PSC did not vary enough to warrant using the more complex methods because, within a given major PSC setting, people tended to go to the same place. In other words, people tended to be stable in their ambulatory care seeking behavior.

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[4]A better alternative conceptually would have been to follow the distribution of the population in assigning a PSC in the case of a tie. Given the low frequency of ties, use of this method would not have changed the assignment of PSC discernibly. We, therefore, chose the simpler method.

The process used to assign PSCs (illustrated in Figure 1) can be summarized as follows:

1. Separate users of ambulatory care from nonusers. If the eligible is a user, then perform steps 2 through 6.

2. Determine which of the following aggregate categories has the maximum number (mode) of visits: total ambulatory hospital visits, total physician office visits, or clinic visits.

3. If clinic has the maximum number of visits, assign clinic as PSC.

4. If the physician's office has the maximum number of visits, assign the category (office visits to a general practitioner or office visits to a specialist) with the maximum number as PSC.

5. If total ambulatory hospital visits has the maximum number of visits, assign the category (public emergency room, public outpatient department, private emergency room, or private outpatient department) with the maximum number as PSC.

6. Assign ties randomly across tied categories.

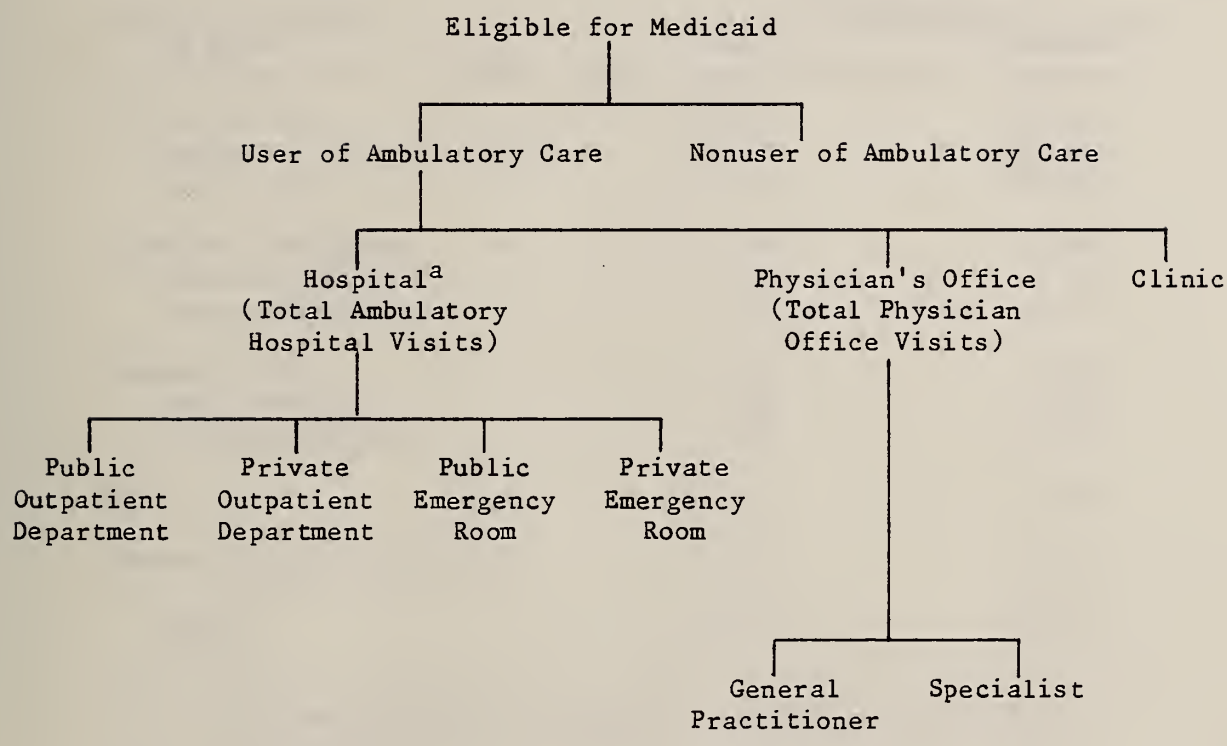
An example will help clarify the process. If total ambulatory hospital visits equal 4, physician visits equal 3, and clinic visits equal 2, then total ambulatory hospital visits would be the first selection. If, within the four ambulatory hospital settings, public outpatient department visits accounted for three visits and the public emergency room accounted for one visit, then the public outpatient department would be the beneficiary's predominant source of care. If there was a tie between the number of public outpatient visits and public emergency room visits, then the predominant source of care would be assigned randomly between the two settings of ambulatory care.

RESULTS

For both the AFDC females and the disabled, Medicaid recipients received the bulk of their ambulatory care in a physician's office, 56 percent and 53 percent, respectively (Table 1). For both samples, in turn, slightly more

Figure 1

Method Used in the Assignment of
Predominant Source of Care



a. In California, the provider can file a claim under two types of procedure: the CRVS (California Relative Value Scale) code, or codes covered under California's Schedule of Maximum Allowances (SMA). During the period of this study, the former (CRVS) were generally used by both the hospital and physician when billing separately for a visit. The latter (SMA) charges were for use of a room and the charges only billed by the hospital. If both the hospital and the physician filed a claim for a visit, then the physician would bill under the CRVS and the hospital under the SMA. If only the hospital billed, then the hospital filed a claim under the CRVS codes and paid the physician. To eliminate the overcount when both the hospital and physician bill for a visit, total ambulatory hospital visits were aggregated from the CRVS claims only. Visits to a public and private hospital were counted using both the CRVS codes and SMA codes; the final count was the maximum of the two.

Table 1

Comparison of the Distribution of Predominant Source of Care by Eligibility Status

Predominant Source of Care[a]	Eligibility Status (percent)	
	AFDC[b]	Disabled[c]
Private Office	56.36	52.67
General & Family Practice	23.60	23.79
Specialist	32.76	28.88
Outpatient Department	7.94	9.06
Public Hospital	4.88	5.31
Private Hospital	3.06	3.75
Emergency Room	8.85	4.86
Public Hospital	1.48	1.63
Private Hospital	7.37	3.23
Clinic	3.57	1.77
Nonuser of Ambulatory Care	23.95	31.64
TOTAL	100.00	100.00

a. Predominant source of care is defined as the setting where the maximum number of ambulatory physician visits occurred for a given patient.

b. Based on a sample of 8,622 female AFDC eligibles who were not eligible for prepaid care and Medicaid-eligible for at least six continuous months. Data are weighted to correct for age cohort and geographic stratification. Those aged 7 - 14 years old and those aged 65 or older are excluded. Los Angeles county and drug claims are excluded.

c. Based on a sample of 8,151 disabled eligibles. Those aged 65 years or older are excluded. Los Angeles County and drug claims are excluded.

than half of those were assigned a specialist (non-GP) PSC. The proportion of beneficiaries assigned to an OPD was also similar for the two groups, 7.9 percent and 9.1 percent, respectively.

The most noteworthy differences in PSC between the AFDC females and the disabled samples occurred in the categories of emergency room and clinic. For the disabled, only 4.9 percent were assigned an emergency room PSC and 1.8 percent a clinic PSC; for the AFDC female sample, the proportions were 8.9 percent emergency room and 3.6 percent clinic. The proportion of nonusers also differed; almost one-third of the disabled population were nonusers of ambulatory care compared to only one-fourth of the AFDC female sample. One possible explanation this difference--that more disabled beneficiaries use long-term care facilities and therefore need no outside source of ambulatory care--turned out not to be supported by the data was because only 1 percent of the nonusers among the disabled received care in a long-term setting. The most likely explanation seems to be that disabled beneficiaries are hospitalized more frequently than AFDC beneficiaries, and therefore probably see the physician as an inpatient, rather than in an ambulatory setting of any kind.[5]

The distributions of PSC for 1976 and 1978 are shown for the two beneficiary groups in Tables 2 and 3. A comparison of the distributions of PSC in 1976 and 1978 for the AFDC sample (Table 2) shows only slight differences between the two years. In 1976, 58.01 percent of the AFDC female beneficiaries received care in a private office compared to 57.41 percent in 1978. The proportion of AFDC female beneficiaries whose PSC was an emergency room also decreased slightly, from 9.11 percent in 1976 to 8.22 percent in 1978. These declines were offset by increases in the proportion of eligibles

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[5]Recipients spending the whole six-month period in hospital were excluded from the sample.

Table 2

Distribution of Predominant Source of Care,
California Female AFDC Medicaid Eligibles
1976-1978

Predominant Source of Care[a]	1976 (percent)	1978 (percent)	Change in Percentage Points 1976-1978
Private Office			
Total	58.01	57.41	-0.60
General & Family Practice	25.14	23.62	-1.52
Specialist	32.87	33.79	0.92
Outpatient Departments			
Total	6.96	8.35	1.39
Public Hospital	5.13	4.61	-0.52
Private Hospital	1.83	3.74	1.91
Emergency Room			
Total	9.11	8.22	-0.89
Public Hospital	1.67	1.13	-0.54
Private Hospital	7.44	7.09	-0.35
Clinic	2.46	3.57	1.11
Nonuser of Ambulatory Care	23.45	22.45	-1.0
TOTAL	100.00	100.00	

NOTE: Based on a sample of 8,622 female AFDC eligibles who were not eligible for prepaid care and Medicaid-eligible for at least six continuous months. Data are weighted to correct for age cohort and geographic stratification. Those aged 7-14 years old and those aged 65 or older are excluded. Los Angeles county and drug claims are excluded.

a. Predominant source of care is defined as the setting where the maximum number of ambulatory physician visits occurred for a given patient.

Table 3

Distribution of Predominant Source of Care,
California Disabled Medicaid Eligibles
1976-1978

Predominant Source of Care[a]	1976 (percent)	1978 (percent)	Change in Percentage Points 1976-1978
Private Office			
Total	50.18	54.43	4.25
General & Family Practice	24.77	23.07	-1.70
Specialist	25.41	31.36	5.95
Outpatient Department			
Total	9.81	8.55	-1.26
Public Hospital	6.52	4.26	-2.26
Private Hospital	3.29	4.29	1.00
Emergency Room			
Total	5.28	4.40	-0.88
Public Hospital	2.02	1.33	-0.69
Private Hospital	3.26	3.07	-0.19
Clinic	1.82	1.85	-0.03
Nonuser of Ambulatory Care	32.91	30.77	-2.14
TOTAL	100.00	100.00	--

NOTE: Based on a sample of 8,151 disabled eligibles. Those aged 65 years or older are excluded. Los Angeles and drug claims are excluded.

a. Predominant source of care is defined as the setting where the maximum number of ambulatory physician visits occurred for a given patient.

whose PSC was an OPD (increasing from 6.96 percent in 1976 to 8.35 percent in 1978) or a clinic (increasing from 2.46 percent to 3.57 percent). Data for the disabled, in contrast, show quite an increase in the proportion of eligibles whose PSC was a private physician's office, from 50.18 percent in 1976 to 54.43 percent in 1978. All of this increase was accounted for by an increase in those whose PSC was a specialist's office. The proportion of nonusers in both samples decreased very slightly.

The frequency of visits by PSC for the two samples is shown in tables 4 and 5. Interestingly, the majority of those AFDC beneficiaries whose PSC was an emergency room had only one visit; only 7 percent of those whose PSC was a public emergency room and only 12 percent of those whose PSC was a private emergency room had three or more visits. For all other PSC categories the frequency of visits shows a bimodal pattern, with the two peaks coming at one to three visits or six or more visits.

For the disabled, the distributions are similar, although the pattern for the emergency room is not as marked as for the AFDC female sample. Only 45.86 percent of those disabled beneficiaries assigned to a public emergency room had one visit, compared to over 70 percent of the AFDC female sample.

The mean numbers of visits by PSC categories are shown in Tables 6 and 7. For both the AFDC female and the disabled eligibles the location that has the highest mean number of visits is indeed the assigned PSC category in each case.

Table 4

Percent Distribution of Visits by Predominant Source of Care,
California Female AFDC Medicaid Eligibles,
January-June, 1976 to 1978

Number of Visits for Each Setting of PSC	Predominant Source of Care[a]						
	Private Office		Public Hospital		Private Hospital		
	GP	Specialist	ER	OPD	ER	OPD	Clinic
0	0.00	0.00	0.14	0.31	1.79	1.58	0.00
1	28.03	26.75	70.43	29.98	66.72	40.55	35.86
2	24.14	21.46	21.98	25.89	19.19	11.26	30.55
3	15.40	19.94	4.50	14.40	8.06	18.41	16.66
4	10.30	9.69	0.88	8.29	2.40	5.95	4.25
5	7.09	6.91	0.00	9.56	0.94	6.53	4.19
6 or more	15.03	15.24	2.06	11.56	0.90	15.72	8.50
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00
(Unweighted sample size)	(2174)	(2997)	(102)	(467)	(491)	(234)	(253)

NOTE: Based on a sample of 8,622 female AFDC eligibles who were not eligible for prepaid care and Medicaid-eligible for at least six continuous months. Data are weighted to correct for age cohort and geographic stratification. Six age cohorts are included. Those aged 7-14 years old and those aged 65 or older are excluded. Los Angeles county and drug claims are excluded.

a. Predominant source of care is defined as the location with the maximum number of ambulatory physician visits for a given patient. GP is general practitioner. ER is emergency room. OPD is outpatient department.

Table 5

Percent Distribution of Visits by Predominant Source of Care,
California Disabled Medicaid Eligibles,
January-June, 1976 to 1978

Number of Visits for Each Setting	Predominant Source of Care[a]						
	Private Office		Public Hospital		Private Hospital		
	GP	Specialist	ER	OPD	ER	OPD	Clinic
0	0.0	0.0	13.53	5.54	8.75	10.78	0.0
1	21.50	21.07	45.86	21.48	57.03	25.82	25.00
2	17.07	17.25	21.05	16.63	18.25	18.63	16.67
3	12.58	14.23	11.28	15.24	5.32	9.80	11.81
4	9.18	10.75	3.76	10.39	4.94	8.50	10.42
5	10.26	8.58	0.75	6.93	3.04	8.17	13.19
6 or more	29.40	28.12	3.76	23.79	2.66	18.30	22.92
TOTAL	100.00	100.00	100.00	100.00	100.00	100.00	100.00
(Sample Size)	(1939)	(2354)	(133)	(433)	(263)	(306)	(144)

NOTE: Based on a sample of 8151 Disabled Medicaid eligibles. Data do not include eligibles aged 65 years or older. Los Angeles county and drug claims are excluded.

a. Predominant source of care is defined as the location with the maximum number of ambulatory physician visits for a given patient. GP is general practitioner. ER is emergency room. OPD is outpatient department.

Table 6

Mean Number of Ambulatory Physician Visits
by Predominant Source of Care,
California AFDC Medicaid Eligibles
January-June 1976 to 1978

	Predominant Source of Care[a]				
Location of Visit	Physician's Office	OPD	ER	Clinic	Total
Physician's Office	3.61	0.53	0.57	0.34	2.14
OPD	0.08	3.40	0.23	0.16	0.31
ER	0.26	0.54	1.67	0.19	0.34
Clinic	0.05	0.08	0.07	2.48	0.11
TOTAL	4.00	4.17	2.54	3.16	2.91
Ratio of PSC Visits to Total Visits (percent)	90.25	81.53	65.75	78.48	--

NOTE: Based on a sample of 8,622 AFDC Medicaid eligibles not eligible for prepaid care and Medicaid-eligible for six continuous months. Los Angeles County and drug claims are excluded. Six age cohorts are included. Those aged 7-14 years or 65 years or older are excluded. Data are weighted to correct for age cohort and geographic stratification.

a. Predominant source of care is defined as the location with the maximum number of ambulatory physician visits for a given patient. OPD is outpatient department. ER is emergency room.

Table 7

Mean Number of Ambulatory Physician Visits
by Predominant Source of Care,
California Disabled Medicaid Eligibles
January-June, 1976 to 1978

	Predominant Source of Care[a]				
Location of Visit	Physician's Office	OPD	ER	Clinic	Total
Physician's Office	4.69	0.51	0.56	0.70	2.55
OPD	0.13	3.27	0.23	0.16	0.32
ER	0.20	0.58	1.85	0.29	0.22
Clinic	0.01	0.02	0.04	4.21	0.05
TOTAL	5.03	4.38	2.68	5.36	3.14
Ratio of PSC Visits to Total Visits (percent)	93.24	74.66	69.03	78.54	--

NOTE: Based on a sample of 8,151 disabled Medicaid eligibles. Los Angeles county and drug claims are excluded. Those aged 65 or older are excluded.

a. Predominant source of care is defined as the location with the maximum number of ambulatory physician visits for a given patient. OPD is outpatient department. ER is emergency room.

LIMITATIONS OF THE CLAIMS DATA FOR ASSIGNMENT OF PREDOMINANT SOURCE OF CARE

The claims data upon which the analysis files are based provide a wealth of information as long as their limitations are recognized. Two such limitations are particularly relevant to the current methodology of assigning predominant source of care.

The first arises because of how visits are billed and the effect this has on assignment of PSC. As already stated, assignment of PSC is based on the frequency of visits. Instances occur, however, where the ambulatory physician visits were included under another category, such as a surgical procedure. In such a case, the provider does not bill for visits as such but includes them under a general charge--producing an undercount of ambulatory visits. Prenatal care visits provide a good example of the problem. These visits were included in a total charge for all physician services related to the pregnancy under a single surgical procedure code, i.e., a "package price." Since the claim was filed only once, individual visits for prenatal care were not billed separately and cannot be accounted for in this method of assigning PSC based on claims data. This is not a significant data problem in cases other than delivery.

The second limitation arises because of instances when both the hospital and physician billed for the visit. As noted in the footnote to Figure 1, in some cases the hospital may have billed for the use of a room but the physician may not have billed for the services delivered. This could occur, for example, in ambulatory hospital settings where the physicians are either salaried physicians or residents. There is an analogous potential problem with cases where the physician billed for a visit in a hospital outpatient setting but there was no matching hospital claim. Neither of these situations occurred in as much as 2 percent of the cases for the AFDC female or disabled

sample members, however, and are unlikely therefore to affect the results perceptibly.

CONCLUSION

Assignment of PSC, using the methodology described in this paper, turns out to be a reliable index of where the beneficiary received most of his or her ambulatory care. This is evidenced by the high correlation between assigned PSC and maximum RVU, and by the close correspondence between assigned PSC and the distribution of visits and mean visits. The lack of dramatic shifts over the three-year period also attests to the stability of the measure.

These data show that the private physician office remains the predominant setting in which California Medicaid beneficiaries received their ambulatory physician care over the study period. This is contrary to the view sometimes expressed that the OPD and ER are taking some of the patient load from the private office. The proportion of those whose PSC was a private office remained unchanged for female AFDC beneficiaries from 1976 to 1978, and increased slightly for disabled beneficiaries during the same period. Detailed analysis examining why people go to different settings for their ambulatory physician care is beyond the scope of this paper. However, the methodology and descriptive data presented here are useful in providing a first-cut analysis of where people go for ambulatory physician care which may be useful in determining policy options in the health care area.

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